Counting Buoys: Build a Citizen Science Web App to Help Keep Track of Resources

Project Title	Counting Buoys: Build a Citizen Science Web App to Help Keep Track of Resources
Project Summary	Boundary, mooring, and information buoys are an integral part of how Florida Keys National Marine Sanctuary manages and protects the natural and cultural resources found in the 2900 nm^2 of water surrounding the Florida Keys. Help us keep track of them with a new citizen science web app.
Country	United States

Project Description

Florida Keys National Marine Sanctuary (FKNMS) manages and protects over 2900 nm^2 surrounding the Florida Keys. One of the ways we accomplish this is through the use of various types of buoys anchored to the sea floor or attached to shipwrecks. With only a handful of full time staff, keeping track of and maintaining the over 900 buoys located within FKNMS is a real challenge.

Currently, information about found or missing buoys are taken via phone, email, or face-to-face reports. We would like to create an engaging, but simple, web or mobile app to help collect reports of buoys to have a consistently updated total picture of the status of buoys within FKNMS. The data collected should be informative and help managers make trip planning decisions in order to maximize results and prioritize vessel operations.

An intern tackling this project should have an interest in web fundamentals, databases, responsive web apps, progressive web app features, user experience, and data analytics.

Required Skills or Interests

Skill(s)
Coding
Data analysis
Data visualization
Design thinking
Software development

Website design

Additional Information

This is in relatively active development using Vue and Firebase integration, without a set timeline at the moment. Check here for more information on a road map or to contribute: https://github.com/rasliche/buoycheck

An intern that takes on this project should have some experience working with basic web technologies such as HTML, CSS, and Javascript. You should also be aware of and interested in working with progressive web technology like service workers and manifests, Single Page Applications, databases, git/github, some possible user authentication, and geolocation/maps.

The front end of this app should be a relatively simple interface that allows a boater to open the web page on their phone, note the presence/absence of surface buoys in a location, and submit that data as a report to a back end server. FKNMS staff should be able to access the data in raw or processed format.

Due to cell service and data availability being limited or non-existent in remote or offshore locations, progressive web app features should be built in from the ground up to allow reliable use even without a data connection.

There should be a back end that processes the reports and creates meaningful and useful data for management decisions. Think machine learning light. Some possibilities are displaying a confidence score for each buoy depending on recency of report, history of user reporting, admin override, or conflicting reports (see github link for ideas); or suggesting a next mission area for the buoy team. Management should be able to view this data in various interesting visual ways like maps and charts that can be used to spot trends or for planning purposes.

You should expect to work on this project iteratively and create a minimum viable product quickly and progressively enhance it to increase functionality throughout the internship. This will require independent work and learning for background knowledge as well as asynchronous collaboration with FKNMS staff and other contributors via github.

Language Requirements

None